AN ANALYSIS OF ONE THOUSAND TESTICULAR SUBSTANCE IMPLANTATIONS

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In presenting this phase of the study of internal secretions, one cannot be unmindful of the publicity which has been given the so-called interstitial gland during the past three years, and of the bad impression this has made upon the medical world.

The rather doubting, skeptical—even intolerant—attitude of the medical profession toward a subject which has been so largely flouted before the public by newspapers, eager for sensational discoveries, particularly along sex lines, can well be condoned.

In the past, physicians have had their fill of the "lost manhood" charlatans. And when word came from abroad in 1918 that youth could be renewed and many of the potentialities restored by the engrafting of interstitial glands of the monkey, the medical profession for the most part ridiculed it, feeling that it was similar in purpose and intent to the widely heralded tuberculosis cure with turtle serum coming from Germany in 1913.

The public, however, clamored for more news about this wonderful and all-absorbing topic, with its mystery and sex-appeal. It became a very interesting subject of conversation among men as well as women in all walks of life.

Soon after Voronoff brought forth this monkey gland announcement, it was emphasized that Lydston of Chicago had been doing similar work with human material since 1913, and that the medical department of the California State Prison had, following his example, been transplanting testicles from recently executed convicts to senile and devitalized men for some time.

Brown-Séquard, in experimenting on himself in 1889, found that by injecting an extract derived from the testicles of dogs, definite dynamic effects were produced. He regained much of his former strength, fatigued less easily, and was able to do work greatly in excess of what he had been capable of before. His

mental faculties were increased, and intellectual efforts became easier. He noticed that he was greatly relieved of constipation, and believed that the testicular extract had an influence, particularly on the spinal cord.

Because of the activities of quacks and charlatans in the time of Brown-Séquard, the complete investigations of this extract were not fully carried out as they should have been. With his experiments, however, an interest in the study of internal secretions was aroused. Indeed, this work marks the "birthday of endocrinology," as such.

This paper deals with one thousand injections of animal testicular substance into 656 human beings. The greater number received only one injection, while to some were administered as many as seven. Among the patients treated were ninety-six unconfined people, including thirteen physicians and seven females. The remaining five hundred and fifty were inmates of the state's prison. This does not include the twenty cases in which human testicles were transplanted from executed convicts to others. But it does include about ninety cases in which a piece of ram's testicle the size of a dollar was implanted by operation into the scrotum or abdominal wall.

It was found that these heterogenous grafts were gradually absorbed. In order to obviate operation in which the rectus fascia of the abdomen was exposed and an implant inserted, a syringe method of implantation was devised. Immediately after the death of the animal, the scrotum with the testicles enclosed was tied off and cut away. This was then taken to the operating room, where the external hair or wool was clipped off and the skin painted with iodine. It was then incised longitudinally, and the cut edges retracted and held away with haemostats. Using other scissors and sterile clamps, the next of the many coats of the dartos fascia were likewise opened, until the tunica vaginalis was reached. The tunica was in like manner incised and retracted, revealing the perfectly aseptic testicle enclosed. This was seized with a tenaculum and withdrawn entirely free of contamination. The epididymis and surrounding tissues were then cut away.

The testicular substance was cut into strips with a knife or cork-borer, in sizes suitable for the filling of the pressure syringe. This instrument is similar to the one devised by Beck for paraffin

injection. A dental syringe with a No. 16 needle, 3½ inches long, has been found to be satisfactory.

By this means the semi-solid testicular substance was injected by force underneath the skin of the abdomen. With this method there were comparatively few sloughs, and the patient was not subjected to a week's hospital inconvenience.

The testicles of goats, rams, boars and deer have been used. So far as can be determined there is very little difference in the effects produced by testicular material obtained from various animals.

The first of these cases was treated in January, 1920, and the last in February, 1922.

In order to see if there were any therapeutic value in this procedure, and if possible to determine what cases, if any, might be benefited, anyone who applied was given treatment. The matter was fully explained to the patient, and he was allowed to use his own judgment as to whether he cared to submit or not.

It was probably fortunate that this work could be carried out in a prison, for in such a place all men are treated alike, and live under the same conditions of food, work, and general surroundings. A good opportunity was given for observing the results, because the patients could be under daily observation, and the "follow-up" conditions were ideal.

As soon as a new prisoner is received at San Quentin, he is given a thorough physical examination, so that his status at entrance is well known. Any changes taking place in the condition of the prisoner can be easily checked up.

In starting this analysis, it might be said that eleven of the patients are now dead. One is thought to have committed suicide, one died of uraemia, three of pneumonia, and six succumbed to tuberculosis.

From a compilation and study of data from these 1000 treatments, it is believed that testicular substances do have a decided effect on conditions of general asthenia. This term is applied to patients who are underweight, lack energy, sleep poorly, have scant appetite, and, to use their own expression, are "all run down." With them nothing definitely pathological can be found. Usually within the first week after the treatment they gain in weight, have increased appetite, enjoy their work, and evince a general buoyancy. Of the 326 patients so diagnosed,

305 have shown by their actions, by their weight, and by their own written reports that they have been markedly benefited. None who have been so afflicted and have received the treatment became worse, but a few did not improve.

In the early experimentation, it was thought that the goal to be reached, and the proof of the treatment, was sexual stimulation. Usually with a relief from an asthenic condition, the sexual manifestations appear as the patient regains normality. If his general condition is below par, his sexual desires may be somewhat lethargic.

Of the total number of patients, 81 reported increased sexual stimulation. This was evidenced to them by frequent erotic dreams with emissions, and frequent erections without undue sexual cause.

It can hardly be said that this treatment cures impotency, although some who have not had sexual manifestations for years have a renewal of this function. On the other hand, three men who claim that they were normal sexually before the testicular substance injections report that their potentialities in this respect have almost entirely faded away.

The difficult problem in this investigation, as in any other regarding health, is to know just how much reliance can be placed in the patient's own statements and observations.

Prisoners as a rule are antagonistic; that is, they are against the officials who have anything to do with their incarceration. The state put them in prison—they are against the state. The officials represent the state—hence they are against the officials. This is mentioned merely to show that anything done by officers of the medical department, or any other department in the prison, would be harshly criticised by them if no benefit were derived from it.

With the gland treatment, however, most of those who took it give a fair and truthful report as nearly as can be determined.

After a few of the men had undergone the injection and found that there was little pain to it, and that they were benefited, they told the other inmates and as a result there were many applications. Instead of being against the treatment, they were for it, even overcoming their natural tendency to oppose.

One of the skin diseases most resistent to treatment is acne. This affection frequently comes at that transition period, when

the youth is entering manhood. Usually after several years it disappears. Among the 656 patients treated with testicular substance, 66 had this disease.

It can be said that acne is markedly influenced by this treatment. One does not have to rely upon the statement of the patient in this regard, for the improvement in the face can be seen. Photographs have been taken before and after the implantation. The acne does not dry up as if by magic, but the number of pimples decrease and very few comedones appear when they are once removed.

Whether testicular substance contains some inherent power like adrenalin to influence asthma, or whether by means of a hormone sent into the blood stream, acting upon the adrenal glands, adrenalin is elaborated, and thus alleviates asthma, is not known. But of the 21 patients of this series who suffered from asthma, 18 secured relief or had the severity of their attacks greatly decreased.

One man, aged 23, who had had asthma all his life, has been given four injections at intervals of three or four months. His arms were badly pocked where he had taken adrenalin by hypodermic. At the present time he rarely has an asthmatic attack. Others give somewhat similar histories. Three of the asthmatic patients have had no relief.

In asthma, as in all other conditions treated, it has been found that sometimes one injection of a dram of testicular substance does not have an appreciable effect. A subsequent injection may, however, prove of benefit. This may be due to the presence or absence of some body in the testicles of one animal that is not in another. This of course is only conjecture.

In some patients the substance injected will remain under the skin and be plainly felt as a shot-like body for several months, while in others it disappears within a few weeks.

The possible advantage of using the whole testicular substance, instead of the extract as Brown-Séquard did, is that it is absorbed so slowly that in this process of absorption the hormone is gradually given off, producing a continuous effect. The extract may be absorbed within a few hours.

There were four cases of diabetes. Three of these claimed improvement, in that they gained in weight and improved in general condition. One man, aged 67, had had diabetes for nine

years, his urine was full of sugar, and there was some gangrene of his toes. He was given two treatments of testicular substance in February and May of 1921. In October he was transferred to Folsom prison, where Dr. Clattenburg, the resident physician, reported that, although this man partook very freely of Christmas candy and pastry, he was unable to find any sugar in the urine after repeated tests.

Three subjects having locomotor ataxia claim that the pains were lessened and that they felt better. Of course, the disease was in no way arrested. It seems that in some way this therapeutic agent has some influence in pain.

Fifty-eight of the patients treated complained of rheumatism. By this term is meant those pains in the back, shoulder and legs for which no definite cause can be found. Forty-nine claimed that their pains have stopped, while four found no difference, and five reported their condition slightly worse. In this connection it might be said that several affirm that cramps in their legs have disappeared.

Among the patients treated, thirty-four were senile. Twenty-seven of them showed improvement in that they were more energetic, ate better, and showed more activity mentally and physically. The observations made on these old men were in many respects similar to those which Brown-Séquard made on himself.

The results in tuberculosis have not been particularly encouraging, for, as previously stated, six of the seventeen patients so afflicted died. Of the others, 10 are benefited by increase in weight and appetite. Those who died were in advanced stages of the disease. One woman with pulmonary lesions gained fifteen pounds, and in spite of afterward contracting influenza, subsequently gained two pounds additional.

Fifty-six patients were suffering from neurasthenia. Some of them were the "hospital pests," never benefited by anything. Of this number, however, thirty-three cases showed decided improvement. They gained in weight, felt fine, and apparently forgot many of their fancied ailments.

It has often been asked what part psychology plays in this treatment. To be sure, that is to be thought of. But it can hardly be said that psychology will influence asthma, or benefit acne, or, without other stimulation, spur up the sexually dor-

mant. The marked improvement in the general asthenic cannot well be placed at the door of psychology.

All of the thirteen physicians who took the treatment, with the exception of one, reported good results. It is extremely doubtful whether auto-suggestion entered into their case.

In their reports, many of the patients claimed that they have been relieved of constipation. No data has been kept on this phase of the subject. Nor have any data been compiled, in these experiments, on blood pressure.

Forty-one of those treated complained of poor vision which necessitated glasses. Thirty-two report that their vision was greatly strengthened after the implantation. One man, an official of the prison, declares that before his treatment he had difficulty in distinguishing the torpedo boats which ply up and down the bay. Following two injections, he affirms that he is not only able to distinguish the boats, but he can read the numbers on the bow. In addition, this man has gained forty pounds in weight. He is an accountant, and credence should be given his statement.

An endeavor was made to interest oculists in this matter of eye improvement. The work was taken up but was not finished.

There have been found no ill effects resulting from the testicular substance implantations, other than an occasional slough of the material. In those cases which do slough, the site of injections swells, becomes reddened and slightly painful. An incision brings out necrotic material and leucocytes. After a few days this heals over with no great inconvenience.

Four subjects have had edema of the scrotum within a few days after the injection. This soon subsided. There are no bad constitutional effects, such as fever, chills, pains or headache. The patient goes about his work as usual, although he might feel some soreness, and occasionally an itching sensation near the needle wound.

In conclusion it might be said that investigation of this subject is being kept up in the endeavor to seek the truth. Many obstacles are placed in the way and the bad impression which is engendered through publicity and the unwarranted claims of medical buccaneers on this poorly charted sea of research must be overcome.

SUMMARY

The results of 1000 implantations of testicular substance in 656 human subjects, including 7 females, are reported. Striking objective improvement was seen in numerous cases of general asthenia, acne vulgaris, asthma and senility. Subjective or objective improvement was seen in various cases of rheumatism, neurasthenia, poor vision and a few other conditions. The results as a whole are tabulated. In general testicular substance seems often to have a beneficial effect in relieving pain of obscure origin and promotion of bodily well being. The operation is practically painless and harmless.

ANALYSIS OF CASES

	Total Cases	Benefited	Not Benefited
General asthenia	336	305	31
Rheumatism	58	49	9
Acne vulgaris	66	54	12
Neurasthenia	56	33	23
Poor vision	41	32	9
Asthma	21	18	3
Tuberculosis	17	10	7
Senility	34	27	7
Sex lassitude	95	81	14
Impotence	19	12	7
Psychopathic inferiority	8		8
Epilepsy	5	3	2
Dementia praecox	8	1	7
Paranoia	3	2	1
Diabetes	4	3	1
Locomotor-ataxia	3	3	
Drug addicts	32		
Dead	11		
Unclassified	28		
No report	30		